Use case

Segment IDs (ADJ-SIDs) may be protected and this protection is advertised in IGP extensions with the B-Flag. A PCE can consider this backup flag as a constraint per LSP / path calculation.

- LSP 1: **must** have a protected path
  - Feasible Result:
    - Path (100, 400)

- LSP 2: **must not** have a protected path
  - Feasible result:
    - Path (300, 500)

- LSP 3: do not care
  - Feasible result:
    - Path (100, 400)
    - Path (200, 400)
    - Path (300, 500)

LFA Links/Paths not shown
Goals

1. Clarify the wording and expected behavior of “Local Protection Desired” (L-Flag) defined in RFC 5440
   • Flag originates from RSVP-TE (RFC3209) and PCE couldn’t use this flag to influence path calculation, so it wasn’t really a constraint for PCE
   • The definition of RFC5440 and the term “Desired” has some vagueness to it / implies a soft constraint
   • For SR-TE LSPs, Protection requirement can influence path calculation
     • Implementations have treated the “Local Protection Desired Bit” differently
       • either as a strict or loose constraint

2. Define a way to signal the strictness of the protection constraint
   • The requirement for protection could be a strict or loose requirement
   • The existing “Local Protection Desired” is a single bit, so unable to signal more than 2 options
Proposal

1. Some additional wording and statements around the usage of the Local Protection Desired Bit, while attempting to be *generally* backwards compatible with existing PCC and PCE implementations.

2. New Flag: Enforcement (E-Flag) to accompany the L-Flag in the LSP Attributes object.

Flags (8 bits):

- **L flag**: As defined in [RFC5440] and further updated by this document. When set, protection is desired. When not set, protection is not desired. The enforcement of the protection is identified via the E-Flag.

- **E flag (Protection Enforcement)**: When set, the value of the L-Flag MUST be treated as a MUST constraint where applicable, when protection state of a SID is known. When E flag is not set, the value of the L-Flag MUST be treated as a MAY constraint.
Next step

- Comments / discussion / feedback appreciated

Thank you